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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,204	02/27/2004	Toshihisa Nozawa	09459.0001	4678
22852	7590	12/06/2006	EXAMINER	
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			DHINGRA, RAKESH KUMAR	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 12/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/787,204

Applicant(s)

NOZAWA ET AL.

Examiner

Rakesh K. Dhingra

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,3,6-9 and 11-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,3,6-9 and 11-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/21/06 has been entered.

Response to Arguments

Applicant's arguments with respect to claims 2, 3, 6-9, 11-18 have been considered but are moot in view of the new ground(s) of rejection as explained hereunder.

Applicant has amended claims 2, 11 by adding new limitations including the limitation "and provided in a wall". New reference by Jiwarei et al (US PGPUB No. 2001/0047849) has been found that reads on independent claims 2, 11. Accordingly claims 2, 11 have been rejected under 35 USC 102 (b). Further dependent claims 3, 6-9, 12-18 have been rejected under 35 USC 103 (a) as explained below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2, 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Jiwari et al (US PG PUB No. 2001/0047849).

Regarding Claim 2: Jiwari et al teach a plasma apparatus (Figure 1) comprising:

A process chamber 2 for processing a substrate 4, a gas inlet port 13 (gas introducing mechanism), an electrode (holding mechanism) for holding a substrate 4 horizontally on its surface, exhaust pipes 14 connected to exhaust pump (not shown) [first exhaust mechanism with first exhaust port] positioned higher than substrate surface, main exhaust pipe 30 with pump 12 (second exhaust mechanism with second exhaust port (paragraphs 0006, 0014, 0040-0046).

Claim limitation - configured to introduce first gas and second gas, in line 3 of the claim, is an intended use limitation and can not be given patentable weight, since structurally the apparatus of prior art does have gas introduction means for introducing process gas, wherefrom any process gas (includes first gas and second gas) could be introduced into the process chamber. Further, claim limitations pertaining to exhaust of plasma processing gas from first exhaust port, and the exhaust of cleaning gas from second exhaust port are intended use limitations and can not be given patentable weight, since the apparatus of prior art meets the structural limitations of the claim. Similarly, the claim limitation "the second gas removing reaction products remaining in the process chamber" (for claim 11) is an intended use limitation and can not be given patentable weight, since the apparatus of prior art meets the structural limitations of the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was

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made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 6, 8, 12, 13, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiwari et al (US PGPub No. 2001/0047849) in view of Xi et al (US PGPub. No. 2003/0198754).

Regarding Claims 3,12: Jiwari et al teach all limitations of the claim but do not teach a hoisting/lowering mechanism configured to move the holding mechanism upward when the substrate is plasma-processed, and move the support mechanism downward when the inside of the chamber is cleaned, wherein the first exhaust port is positioned higher than the surface of the substrate on the holding mechanism that has been moved up by the hoisting/lowering mechanism, and wherein the second exhaust port is positioned lower than the holding mechanism that has been moved down by the hoisting/lowering mechanism.

Xi et al teach an apparatus (Figures 1, 9) that includes a process chamber 10 with dual exhausts 18A, 18B, substrate support pedestal 46 and a lift assembly (hoisting /lowering mechanism) 48 that enables up/down movement of support pedestal. Xi et al further teach that at any given moment either one, or both or none of the exhaust is open to cavity. Xi further teach a controller 70 that regulates the operation of various components of the processing system (includes control of first and second exhaust ports, up/down movement of holding mechanism during processing operations (paragraphs 0031-0032, 0041, 0058).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a hoisting/lowering mechanism and a system controller as taught by Xi et al in the apparatus of Jiwari et al to enable alter height of substrate holder and also provide control and regulation over various sub-systems of the processing system.

Regarding Claims 6, 8,13, 15: Xi et al teach that both exhausts 18A,18B can be connected concurrently to process chamber (paragraph 0041).

Claims 7, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiwari et al (US PGPub No. 2001/0047849) in view of Rossman (US PGPub. No. 2003/0211735)

Regarding Claims 7, 14: Jiwari et al teach all limitations of the claim including use of microwaves for plasma processing (claim 11), but do not expressly teach use of microwave generated plasma during chamber cleaning.

Rossman teaches a substrate processing apparatus (Figure 7A) wherein a microwave generator 150 is used for generating plasma for cleaning of process chamber 113 (paragraph 0054). Further, use of reactive gas for cleaning is a process limitation and is not given patentable weight, since apparatus of prior art meets all structural limitations of the claim.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a microwave generated remote plasma as taught by Rossman in the apparatus of Jiwari et al to protect chamber components from the temperature, radiation or bombardment present during plasma generation in-situ.

Claims 9, 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiwari et al (US PGPub No. 2001/0047849) in view of Xi et al (US PGPub. No. 2003/0198754) as applied to Claims 3, 12, 13 and further in view of Rossman (US PGPub No. 2003/0211735).

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Regarding Claims 9, 16-18: Jiwari et al in view of Xi et al teach all limitations of the claim including use of microwaves for plasma processing (claim 11 - Jiwari et al), but do not expressly teach use of microwave generated plasma during chamber cleaning.

Rossman teaches a substrate processing apparatus (Figure 7A) wherein a microwave generator 150 is used for generating plasma for cleaning of process chamber 113 (paragraph 0054). Further, use of reactive gas for cleaning is a process limitation and is not given patentable weight, since apparatus of prior art meets all structural limitations of the claim.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use a microwave generated remote plasma as taught by Rossman in the apparatus of Jiwari et al in view of Xi et al to protect chamber components from the temperature, radiation or bombardment present during plasma generation in-situ.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rakesh Dhingra



Parviz Hassanzadeh
Supervisory Patent Examiner
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